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5 To reduce losses as a result of the light pipe transmission, there is are lenses
formed to collimate light between the transducer end of the light pipe and the
optical transducer. The collimating lenses are formed in the light pipe. There are
also provided additional lenses on the optical data port side of the light port.
Transmitted light from the light pipe passes through a lens that increases the
10 illumination angle of the light exiting from the optical data port. Received light
passes through a lens that amplifies and collimates the light into the receiving light
pipe.